

## SYSTEM AND METHOD FOR FULLY UTILIZING AVAILABLE OPTICAL TRANSMISSION SPECTRUM IN OPTICAL NETWORKS

### ABSTRACT OF THE DISCLOSURE

5           A system and method for facilitating full utilization of an ultra-wide optical communication band spanning the useable band of the optical transmission spectrum, and providing appropriate protection strategies on the same mesh/ring network for all channels within the ultra-wide optical communication band. A network node architecture includes a band splitter to receive all of the optical signals sent on various wavelengths within the wide optical communication band. The band splitter separates a first group of the optical signals from a second group of the optical signals based on their range of wavelength. The first group of optical signals are those within a first wavelength range of the optical communication band, and the second group is from the second wavelength range of the optical communication band. A cross-connect circuit receives the first and second groups of optical signals, and routes them to targeted output ports at the output section of the node. The first and second groups of optical signals are combined by a band combiner into an aggregate plurality of optical signals to be collectively transmitted from the network node.